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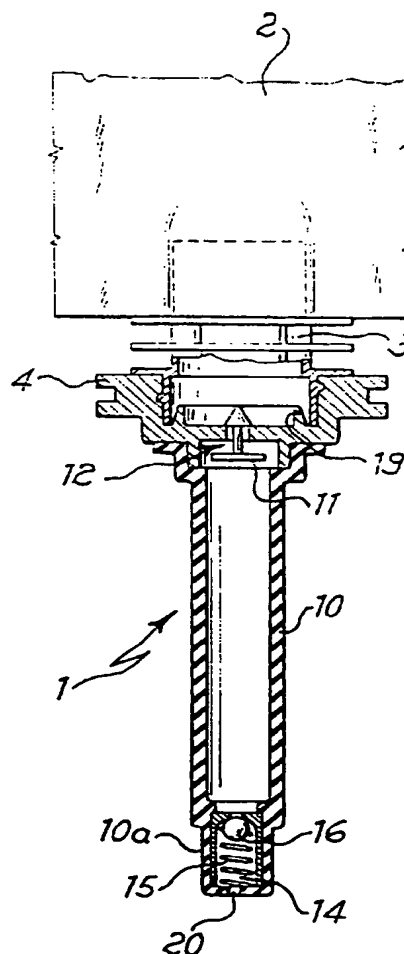
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**Dispensing arrangement for a liquid soap dispensing apparatus.**

An improved dispensing arrangement (1) adapted to be used in a liquid soap dispensing apparatus, of a type including a check valve (12) in the upper portion thereof and a small dispensing valve (14) in the exit area thereof, at the bottom of a thin flexible tube (10). The improvement comprises the fact that in the upper region of said check valve said tube is fastened to an internally threaded nut (4) for threaded engagement with corresponding threads provided at the dispensing port of a supply cartridge (2). Said nut (4) comprises the support member for the whole arrangement within the dispenser, possibly by using a peripheral circumferential deep groove (6) thereof. In addition said dispensing valve comprising, as it is already known, a spring (15) and a moving ball-shaped or poppet-shaped valve member (16), is inserted within a cartridge locked at the lower end of said tube and provided with a seat for said moving member.

**Fig. 2**



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This invention concerns a dispensing arrangement for liquid soap dispensing apparatus, which is improved concerning the operations of assembly within the apparatus, in connection with the supply cartridge or bag, as well as mounting of the dispensing valve therewithin. As it is known, a type of supplying arrangement which is becoming increasingly popular and is already widely used in liquid soap dispensers, uses disposable bags or cartridges, rather than refillable containers. In general, said disposable bags comprise a loose and shapeless plastic material container which is completely sealed except for a dispersing tube feeding to the outside and integral therewith, and usually to be disposed therewith after using. It should be noted that the cost of said tube cannot be disregarded in that it is provided with at least one dispensing valve which, as it is easily understood, one tries to provide in the most inexpensive way, although the results are not very satisfactory.

As it is also known, in particular for containing liquid food products, there have been recently manufactured and sold bags and cartridges having a smaller volume and being more self-supporting, whereby they can be more easily introduced in liquid soap dispensers when they are used for this purpose. The side of the cartridge which is normally heat sealed and facing downwards after the cartridge has been tipped over for product delivery, is normally fitted with an outside threaded dispensing port usually thermally sealed thereto. If a dispensing arrangement there is in turn provided with internal threads, it will be possible to reuse it many times for different cartridges, without having to be disposed therewith.

Therefore, it is an object of this invention to provide a dispensing arrangement for liquid soap dispensing apparatus, provided with a check valve in the upper portion thereof, which is enclosed by an internally threaded nut having a surface which is wide enough to enable said arrangement to bear upon a special supporting member integral with the apparatus, said nut being internally threaded and being provided with a groove running around the whole periphery thereof, for possible insertion in a type of support embodied in a different way; a dispensing valve being provided at the opposite or lower end of the flexible material tube connecting the same to the upper check valve, said dispensing valve being comprised of a cartridge containing a compression spring and a displaceable sealing member bearing against a seat provided within said cartridge.

Therefore, this type of dispensing member has the advantage that, in addition to being reusable for a number of supply cartridges, it requires simpler dispensing apparatus to be used with, and in particular the one making the subject of Patent Application No. MI91A001549 of the same applicant, in that the check valve function is built into said dispensing arrangement, and does not need to be performed by the dis-

penser.

Further objects, advantages and features of the dispensing arrangement of this invention will become more apparent from the following detailed description, referring to the attached drawings, wherein:

Figure 1 shows an exploded view, partially in vertical section, of the dispensing arrangement according to this invention, close to the outlet threaded plug of a supply cartridge; and

Figure 2 is a vertical sectional view of said dispensing arrangement, being threaded on the delivery cartridge.

Referring now to the drawings, dispensing arrangement 1 for liquid soap dispenser apparatus includes an elongated tubular member 10 of a resilient material, like for instance rubber, having mounted at the upper end thereof a check valve 12 provided with a poppet-shaped valve member 12. At the lower end of tube 10 there is provided a dispensing valve 14 adapted to retain the liquid from coming out when tube 10 is not subjected to pressure, whereby the liquid thereabove is not compressed and cannot overcome the force of spring 15. Only in this case liquid can flow out of lower opening 20, while normally spring 15 biases displaceable ball-shaped or poppet-shaped movable member 16 to bear against seat 16a thereof, in order to interrupt a downward liquid flow through opening 17. According to this invention, the casing of valve 14 is a rigid cartridge 18 made for instance of a thermoplastic material, and which is introduced from the top, together with members 15 and 16 within tube 10, until it goes to abut, with a slight interference fit due to the resiliency of tube 10, against the lower end thereof, which is shown at 10a in Figure 1, having preferably a reduced cross section compared to the remaining portions of the tubular member.

At the upper end of tube 10, the dispensing arrangement of this invention has a nut member 4 provided with a central recess 5 adapted to enable the member to be connected to protruding plug 3 of cartridge 2. As it is shown in the drawings, the wall surrounding said recess 5, within nut 4, has a thread 8 for threading engagement with plug 3 outer thread. In addition, the bottom of said recess 5 has a disc-shaped area 7 provided with a center opening 13 for possibly receiving valve member 11 of check valve 12 when, being pushed upwards by the internal pressure of tube 10 being squashed, it prevents the liquid there-within from flowing back upwards into supply cartridge 2. Around area 7 and perpendicular thereto there projects a small collar 19 adapted to fit into delivery port 3 of cartridge 2, in a sealed engagement therewith. Still according to this invention, the cross section of nut 4 is sufficiently wide to have a large enough bearing area against a support member, for instance a fork-shaped member provided inside the dispenser. According to a preferred embodiment, around the periphery of nut 4 there is provided a circumferential re-

cess or groove 6 for possible insertion of the nut within a support member of said dispenser, which may be more suited to support the dispensing arrangement in such a way, than through a direct support of said nut. From the above, the advantage of a dispensing arrangement according to this invention should be apparent, in that it may be re-used many times, when cartridge 2 is replaced, which cartridge may be easily removed by unscrewing followed by screwing in of a new cartridge and by the insertion of the dispensing arrangement on the dispenser support. The latter may be quite simple in construction, in that it is not required to be designed for the motion providing the check valve function, already included in the dispensing assembly. Furthermore, according to a non-secondary aspect of this invention, nut 4 comprises a wide and secure bearing base, possibly with a clamping effect in slot 6, not only for the whole dispensing arrangement but also for cartridge 2, on a structure member (not shown) of the dispensing device, without incurring in those problems of position uncertainty which affect known dispensing arrangements, integral with the supply cartridges, and which are caused also by the fact that this type of dispenser with a built-in cartridge is usually less self-supporting.

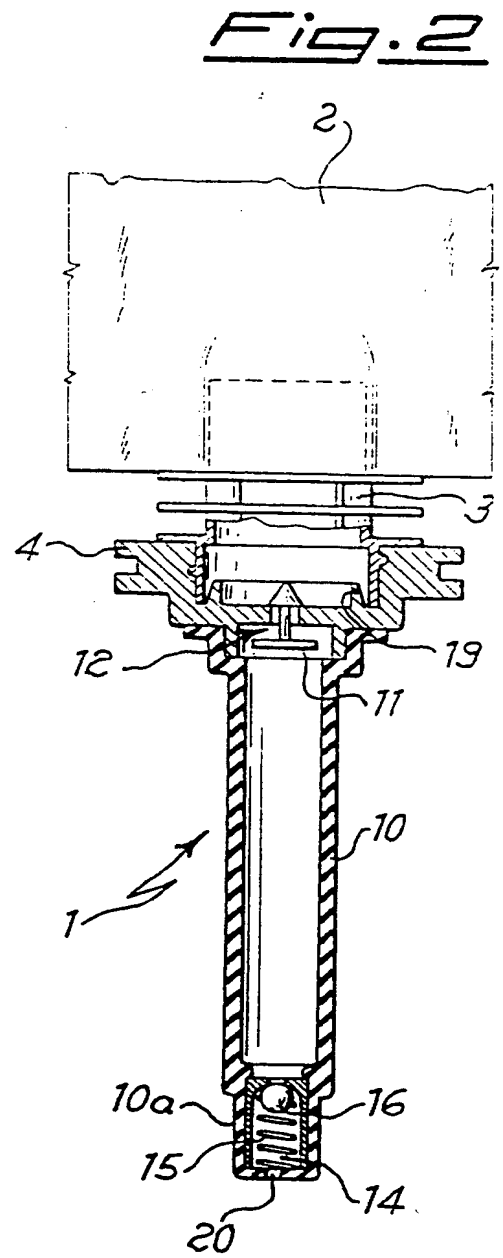
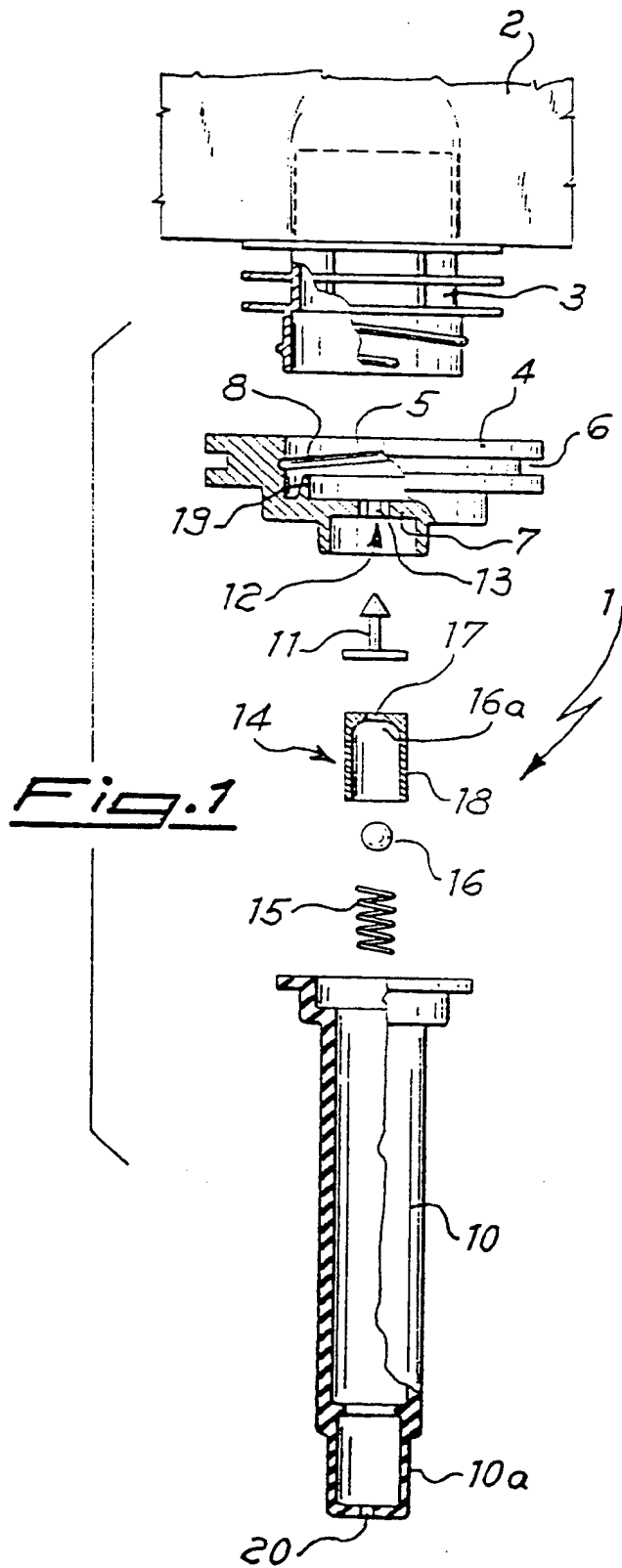
It should eventually be noticed how convenient is the assembly procedure which does not require any adhesive to be used for the encased dispensing valve which is inserted with a slight fit at the lower end of tube 10. Possible additions and/or modifications may be made by those skilled in this art to the embodiment, as described and shown above, of the dispensing arrangement according to this invention which, as it is understood, will not be limited to what has been described herein above, but will encompass any possible mechanical variation or equivalent approach which can provide the same benefits.

#### Claims

1. A dispensing arrangement for liquid soap dispensing apparatus, including a resilient material elongated tubular member (10) provided with means (4) for connecting to dispensing port (3) of a product supply cartridge (2) and, at the opposite end of member (10), a dispensing valve (14), characterized in that said fastening means (4) comprise a rigid material nut, provided with an internal thread (8) surrounding a recess (5) which is coaxially provided within said nut.
2. The dispensing arrangement according to claim 1, characterized in that the outer periphery of nut (4) has a deep circumferentially extending groove (6).
3. The dispensing arrangement of claim 1 or 2, char-

acterized in that said recess (5) bound by said thread (8) is defined at the bottom by a wall (7) integral with nut (4), having a central through opening (13) adapted to provide the passage opening for a check valve (12) having a movable member (11).

4. The dispensing arrangement of claim 3, characterized in that it includes, in a peripheral position relative to said wall (7), a circumferentially projecting collar (19) adapted to sealingly engage said port (3) of cartridge (2).
5. A dispensing arrangement according to any one of the preceding claims, characterized in that said dispensing valve (14) has a resiliently compressible member (15) and a moving member (16) within a rigid material cartridge (18) which is provided with an internal seat (17) for said moving member (16) at the position of a central through opening (16a), cartridge (18) being adapted to be retained into position by the resiliency of the material of member (10) at the free end area (10a) thereof, having a smaller cross section, and being provided with a dispensing opening (20) at the end thereof.





European Patent  
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# EUROPEAN SEARCH REPORT

Application Number

EP 92 83 0297

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	US-A-4 773 569 (LARSSON) * column 3, line 47 - column 4, line 44; figures 1-3 *	1,3	A47K5/12
A	---	2,4	
X	DE-A-3 430 646 (BELZ APPARATE AG.) * page 6, paragraph 5 - page 9, paragraph 4; figure 1 *	5	
A	GB-A-2 183 617 (MOAKES) * abstract; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A47K B67D B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27 AUGUST 1992	Examiner CLASING M. F.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons  &amp; : member of the same patent family, corresponding document</p>			

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